FW

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,639	07/24/2003	Hiroki Kaneko	520.42879X00	8077

20457 7590 11/28/2005

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
BECK, ALEXANDER S	
ART UNIT	**PAPER NUMBER**
2675	

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/625,639	KANEKO ET AL.	
	Examiner	Art Unit	
	Alexander S. Beck	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. **Claim 14** is objected to because of the following informalities: there is insufficient antecedent basis for the limitations "bumps" and "windows" in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1 and 3** are rejected under 35 U.S.C. 102(e) as being anticipated by *Ikeda et al.* (US 6,897,996 B2, hereinafter "Ikeda").

As to independent **Claim 1**, Ikeda teaches/suggests an electrophoretic display comprising a first **1** and second **2** substrates each being disposed with a predetermined gap therebetween; a layer comprising an insulating solvent **4** and charged particles **5** dispersed in

the insulating solvent, the layer being sandwiched between the substrates; a first electrode **7** disposed on one of the substrates; and a second electrode **6** disposed on the second substrate, wherein the second electrode has a reflector with uneven surface (Ikeda: col. 4, lines 8-34; col. 9, lines 7-17; col. 10, lines 55-60).

As to **Claim 3**, Ikeda teaches/suggests wherein the first electrode **7** is disposed on the second substrate **2**, and the second electrode **6** also works as the reflector (Ikeda: col. 4, lines 8-34; col. 9, lines 7-17).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 2 and 4-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ikeda et al.* (US 6,897,996 B2) as applied to Claims 1 and 3 above, and further in view of *Johnson et al.* (US 2002/0167480 A1, hereinafter "Johnson").

As to **Claim 2**, note the above discussion of Ikeda with respect to Claim 1. Ikeda teaches/suggests wherein the second electrode **6** also works as the reflector (Ikeda: col. 4, lines 8-34; col. 9, lines 7-17).

Ikeda does not disclose expressly wherein the first electrode is disposed on the first substrate.

Johnson teaches/suggests an electrophoretic display wherein two first electrodes **6,6'** are provided on a first substrate **12** and a second electrode **7** is provided on a second substrate **11** (Johnson: page 2, par [0031-0035]).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the electrophoretic display of Ikeda such that the first electrode comprised two electrodes and was disposed on a substrate opposite to that of the second electrode, as taught/suggested by Johnson.

The suggestion/motivation for doing so would have been to realize intermediate optical states via electric voltages on the supplementary first electrode **6'** (Johnson: page 2, par [0031]).

As to **Claim 4**, Ikeda teaches/suggests that there is no specific restrictions on the shape of the uneven surface, as illustrated in **FIGS. 2A** to **2D** (Ikeda: col. 4, lines 53-59), and is therefore inherent that the combined teachings of Ikeda and Johnson, as previously combined

in the rejection of Claim 2 above, would result in the first electrode disposed above the uneven surface of the second electrode.

As to **Claim 5**, Ikeda teaches/suggests that there is no specific restrictions on the shape of the uneven surface, as illustrated in **FIGS. 2A** to **2D** (Ikeda: col. 4, lines 53-59), and is therefore inherent that the combined teachings of Ikeda and Johnson, as previously combined in the rejection of Claim 2 above, would result in the first electrode disposed in the flat portions of the uneven surface of the second electrode.

As to **Claim 6**, note the above discussion of Ikeda and Johnson with respect to Claims 1,2 and 4. Ikeda teaches/suggests wherein the protrusions of the uneven surface on the second electrode emphasize a reflected light on said second electrode (Ikeda: col. 10, lines 55-60).

Neither Ikeda nor Johnson discloses expressly wherein the protrusions of the uneven surface on the second electrode are patterned at random.

Ikeda does, however, teach/suggest wherein a surface that functions as a reflector can irregularly reflect light if it is roughened (Ikeda: col. 9, lines 7-17) (i.e., randomly covered with grooves, bumps, protrusions, rivets, etc.).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the electrophoretic display of Ikeda and Johnson such that the protrusions on the second electrode for reflecting light were patterned at random, as taught/suggested by Ikeda.

The suggestion/motivation for doing so would have been to irregularly reflect light (Ikeda: col. 9, lines 7-17).

As to **Claim 7**, most of the claim limitations have already been discussed and met by references Ikeda and Johnson, as detailed in the above paragraphs regarding Claims 1,2,4 and 6, with the exception of: the first electrode having the same uneven surface as that of the second electrode, both of the surfaces overlapping with each other at least part of them, of which neither Ikeda nor Johnson discloses expressly.

Ikeda does, however, teach/suggest wherein the protrusions of the uneven surface on the second electrode and the first electrodes are dependent upon one another, in that the region of the protrusion is determined according to the portion where the electric strength needs to be intensified between first and second electrodes (Ikeda: col. 4, lines 8-34).

When the protrusions of the uneven surface on the second electrode are randomly patterned, as previously met in combination of Ikeda and Johnson in the rejection of Claim 6 above, it would have been obvious to a person of ordinary skill in the art to further modify the electrophoretic display of Ikeda and Johnson such that the first electrodes were disposed with the same uneven surface as that of the second electrode, both of the surfaces overlapping with each other at least part of them, as taught/suggested by Ikeda.

The suggestion/motivation for doing so would have been to intensify the electric strength between the first and second electrodes where needed (Ikeda: col. 4, lines 8-34).

As to **Claim 8**, Ikeda teaches/suggests wherein the uneven surface has a string structure of continuous bumps (Ikeda: col. 4, lines 8-34), wherein it is inherent that the pattern is random, as discussed and detailed in the above paragraphs regarding Claim 6.

As to **Claim 9**, note the above discussion with respect to Claim 1.

Ikeda does not disclose expressly wherein separated electrode segments constitute a first electrode, the segments in the same pixel being on the same potential.

Johnson teaches/suggests the first electrode **6,6'** wherein separated electrode segments **6,6'** constitute the first electrode, the segments in the same pixel being on the same potential (Johnson: page 2, par. [0031-0035]).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the electrophoretic display of Ikeda and Johnson such that the separated electrode segments constitute the first electrode and the segments in the same pixel being on the same potential, as taught/suggested by Johnson.

The suggestion/motivation for doing so would have been to realize intermediate optical states via electric voltages on the supplementary first electrode **6'** (Johnson: page 2, par [0031]).

As to **Claim 10**, Ikeda teaches/suggests wherein the charged particles have a low reflection ratio, its color being substantially black (Ikeda: col. 5, line 54 – col. 6, line 51).

As to **Claim 11**, Ikeda teaches/suggests wherein first electrodes have a low reflection ratio, its color being substantially black, so as to achieve high blackness (Ikeda: col. 7, lines 20-24).

As to **Claim 12**, Ikeda teaches/suggests wherein active elements **10** are disposed on the second substrate **2** to display picture images by active matrix drive (Ikeda: col. 7, lines 25-27).

As to independent **Claim 13**, most of the claim limitations have already been discussed and met by references Ikeda and Johnson, as detailed in the above paragraphs regarding Claims 1,2,4,6 and 7, with the exception of: wherein the first electrode has a network structure of a random pattern, of which neither discloses expressly.

Ikeda teaches/suggests wherein the protrusions of the uneven surface on the second electrode and the first electrodes are dependent upon one another, in that the region of the protrusion is determined according to the portion where the electric strength needs to be intensified between first and second electrodes (Ikeda: col. 4, lines 8-34).

When the protrusions of the uneven surface on the second electrode are randomly patterned, as previously met in combination of Ikeda and Johnson in the rejection of Claim 6 above, it would have been obvious to a person of ordinary skill in the art to further modify the electrophoretic display of Ikeda and Johnson such that the first electrodes were disposed randomly with the same uneven surface as that of the second electrode, both of the surfaces overlapping with each other at least part of them, as taught/suggested by Ikeda.

The suggestion/motivation for doing so would have been to intensify the electric strength between the first and second electrodes where needed (Ikeda: col. 4, lines 8-34).

As to **Claim 14**, most of the claim limitations have already been discussed and met by references Ikeda and Johnson, as detailed in the above paragraphs regarding Claim 2, with the exception of: the bumps of the uneven surface are present in the windows of the network structure of the first electrode.

Ikeda teaches/suggests wherein the region of the protrusion is determined according to the portion where the electric strength needs to be intensified between first and second electrodes (Ikeda: col. 4, lines 8-34), and is therefore inherent that the combined teachings of

Ikeda and Johnson, as previously combined in the rejection of Claims 6 and 13 above, would result in the bumps of the uneven surface present in the windows of the network structure of the first electrode because the protrusions are located in regions in which there are no first electrodes disposed directly above (i.e., a window) so as to intensify the electric strength.

As to **Claims 15-18**, all of the claim limitations have already been discussed and met by references Ikeda and Johnson, as detailed in the above paragraphs regarding Claims 9-12.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

White (US 4,650,288) discloses an electrophoretic display device comprising a black first electrode with network structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Alexander S. Beck** whose telephone number is **(571) 272-7765**. The examiner can normally be reached on M-F, 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Sumati Lefkowitz** can be reached on **(571) 272-3638**. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

asb

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER